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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,397	10/22/2001	Jenoe Tihanyi	WMP-SME-515	9726

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EXAMINER
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LEWIS, MONICA

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/007,397

Applicant(s)

TIHANYI, JENOE

Examiner

Monica Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 27 June 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This action is in response to the amendment filed June 27, 2003.

#### ***Response to Amendment***

2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

#### ***Information Disclosure Statement***

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

4. The information disclosure statement filed 2/27/02 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

#### ***Drawings***

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following must be shown or the feature(s) canceled from the claim(s): a) "second terminal zone has a first section extending vertically to said second layer; and second layer laterally extends at a level; second terminal zone

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has a second section extending laterally at said level of said second layer” (See Claim 25); b) “first section and said second section of said second terminal zone form a well like structure enclosing said first terminal zone and at least some of said compensation zones” (See Claim 26); and c) second terminal zone has a first section extending vertically to said second layer; second terminal zone has a second section extending laterally near said second layer” (See Claim 27). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

6. The specification is objected to as failing to provide proper antecedent basis for the following: a) first layer has a number of dopant atoms of said first conduction type and a number of dopant atoms of said second conduction type that are approximately identical See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 25-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by the following: a) “second terminal zone has a first section extending vertically to said second layer; second layer laterally extends at a level; second terminal zone has a second section extending laterally at said level of said second layer” (See

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Claim 25); b) "first layer has a number of dopant atoms of said first conduction type and a number of dopant atoms of said second conduction type that are approximately identical" (See Claim 29); and c) "second terminal zone has a first section extending vertically to said second layer; second terminal zone has a second section extending laterally near said level of said second layer" (See Claim 27). Claims 26 and 28 depend directly or indirectly from a rejected claim and are, therefore, also rejected under 35 U.S.C. 112, second paragraph for the reasons set above.

### ***Double Patenting***

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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10. Claims 22, 23, 25, 26, 28 and 29 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No.10/033,122. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a vertical field effect semiconductor component, terminal zones, channel zones and compensation zones.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

12. Claims 15 and 22 are rejected under 35 U.S.C. 102(a) as being anticipated by Kouno et al. (U.S. Patent Application 6,365,932).

In regards to claim 15, Kouno et al. ("Kouno") discloses the following:

a) a semiconductor body having a substrate (102) of a first conduction type and a first layer of a second conduction type located above said substrate (106) (For Example: See Figure 2);

b) a channel zone (112) of said first conduction type formed in said first layer (For Example: See Figure 2);

c) a first terminal zone (111) of said second conduction type configured adjacent said channel zone (For Example: See Figure 2);

d) a second terminal zone (118) of said first conduction type formed in said first layer (For Example: See Figure 2);

e) compensation zones (117) of said first conduction type formed in said first layer (For Example: See Figure 2); and

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f) a second layer (105) of said second conduction type configured between said substrate and said compensation zones (For Example: See Figure 2).

In regards to claim 22, Kouno discloses the following:

a) compensation zones have a spherical design (For Example: See Figure 2).

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 16-19 and 30 are rejected under 35 U.S.C. 103(a) as obvious over Kouno et al.

(U.S. Patent Application 6,365,932) in view of Ueno (U.S. Patent Application No. 6,512,268).

In regards to claim 16, Kouno fails to discloses the following:

a) a boundary zone of said first conduction type extending vertically in said first layer towards said semiconductor body.

However, Ueno discloses a boundary zone (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Kouno to include a boundary zone as disclosed in Ueno because it aids in sustaining the breakdown voltage (For Example: See Column 3 Lines 27-30).

Additionally, since Kouno and Applicant's Ueno are both from the same field of endeavor, the purpose disclosed by Ueno would have been recognized in the pertinent art of Kouno.

In regards to claim 17, Kouno fails to disclose the following:

a) boundary zone extends from said channel zone to said substrate.

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However, Ueno discloses a boundary zone (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Kouno to include a boundary zone as disclosed in Ueno because it aids in sustaining the breakdown voltage (For Example: See Column 3 Lines 27-30).

Additionally, since Kouno and Applicant's Ueno are both from the same field of endeavor, the purpose disclosed by Ueno would have been recognized in the pertinent art of Kouno.

In regards to claim 18, Kouno fails to disclose the following:

- a) boundary zone is laterally spaced away from said channel zone.

However, Ueno discloses a boundary zone (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Kouno to include a boundary zone as disclosed in Ueno because it aids in sustaining the breakdown voltage (For Example: See Column 3 Lines 27-30).

Additionally, since Kouno and Applicant's Ueno are both from the same field of endeavor, the purpose disclosed by Ueno would have been recognized in the pertinent art of Kouno.

In regards to claim 19, Kouno discloses the following:

- a) semiconductor body has a first surface (For Example: See Figure 2).

In regards to claim 19, Kouno fails to disclose the following:

- b) boundary zone extends from said first surface of said semiconductor body to said substrate.

However, Ueno discloses a boundary zone (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Kouno to include a boundary zone as disclosed in Ueno because it aids in sustaining the breakdown voltage (For Example: See Column 3 Lines 27-30).



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Additionally, since Kouno and Ueno are both from the same field of endeavor, the purpose disclosed by Ueno would have been recognized in the pertinent art of Kouno.

In regards to claim 30, Kouno discloses the following:

a) a semiconductor body having a substrate of a first conduction type and a first layer of a second conduction type located above said substrate (For Example: See Figure 2); and

b) a second layer on said second conduction type formed between said first layer and said substrate.

In regards to claim 30, Kouno fails to disclose the following:

a) second layer being doped more weakly than said first layer.

However, the limitation of "second layer being doped more weakly than said first layer" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in

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*"product by process"* claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

b) a boundary zone of said first conduction type, said boundary zone vertically extending to said substrate and to said second layer.

However, Ueno discloses a boundary zone (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Kouno to include a boundary zone as disclosed in Ueno because it aids in sustaining the breakdown voltage (For Example: See Column 3 Lines 27-30).

Additionally, since Kouno and Applicant's Ueno are both from the same field of endeavor, the purpose disclosed by Ueno would have been recognized in the pertinent art of Kouno.

15. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as obvious over Kouno et al. (U.S. Patent Application 6,365,932) in view of Ueno (U.S. Patent Application No. 6,512,268) and Miyasaka et al. (U.S. Patent No. 6,291,856).

In regards to claim 20, Kouno fails to disclose the following:

a) compensation zones have a pillar-shaped design.

However, Miyasaka et al. ("Miyasaka") discloses pillar shaped compensation zones (For Example: See Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Kouno to include pillar shaped compensation zones as disclosed in Miyasaka because it aids in providing a high withstand voltage (For Example: See Column 1 Lines 60-67 and Column 2 Lines 1-12).

Additionally, since Kouno and Miyasaka are both from the same field of endeavor, the purpose disclosed by Miyasaka would have been recognized in the pertinent art of Kouno.

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In regards to claim 21, Kouno discloses the following:

a) at least some of said compensation zones adjoin said channel zone (For Example See Figure 2).

16. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as obvious over Kouno et al. (U.S. Patent Application 6,365,932).

In regards to claim 23, Kouno discloses the following:

a) compensation zones define first compensation zones (For Example: See Figure 2);

b) first layer has second compensation zones (115) of said second conduction type formed therein (For Example: See Figure 2); and

c) second compensation zones are adjacent said first compensation zones (For Example: See Figure 2).

In regards to claim 23, Kouno fails to disclose the following:

a) second compensation zones are doped more heavily than said second layer.

However, the limitation of "compensation zones are doped more heavily than said second layer" makes it a product by process claim. The MPEP § 2113, states, "Even though product - by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA

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1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 24, Kouno fails to disclose the following:

a) boundary zone is doped more heavily than said substrate.

However, the limitation of "boundary zone is doped more heavily than said substrate" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

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***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

July 24, 2003

  
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